

REMARKS

The Office Action mailed December 3 2008, and made Final, has been carefully reviewed and the foregoing Amendment and following remarks have been made in consequence thereof.

Claims 18-23 are pending in this application. Claims 18-23 stand rejected.

The rejection of Claims 18-23 under 35 U.S.C. § 112, first paragraph is respectfully traversed. Claims 18 and 20 have been amended to address the issues raised in the Office Action. Claim 19 depends from Claim 18, and Claims 21-23 depend from Claim 20. As such, Applicants respectfully submit that Claims 20-23 satisfy Section 112, first paragraph. For at least the reasons set forth above, Applicants respectfully request that the rejection of Claims 18-23 under Section 112 be withdrawn.

The rejection of Claims 18-23 under 35 U.S.C. § 112, second paragraph is respectfully traversed. Claims 18 and 20 have been amended to address the issues raised in the Office Action. Claim 19 depends from Claim 18, and Claims 21-23 depend from Claim 20. As such, Applicants respectfully submit that Claims 18-23 satisfy Section 112, second paragraph. For at least the reasons set forth above, Applicants respectfully request that the rejection of Claims 18-23 under Section 112, second paragraph be withdrawn.

The rejection of Claims 20-23 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 4,059,123 (Bartos) is respectfully traversed.

Bartos describes a turbine engine cleaning unit (10). Unit (10) includes a water reservoir (18), a preservative reservoir (20), a cleaner reservoir (22), and a solvent reservoir (24). A ring assembly (96) injects fluid into a gas turbine engine. Ring assembly (96) includes two arcuate tube sections (222, 224) that are each coupled to a T-section (226). T-section (226) is coupled to a high pressure hose (94) that is coupled in flow communication with unit (10). Holes (232) are defined within a front face of each tube section (222, 224). Holes (232) discharge liquid in a direction that is substantially perpendicular to the plane of ring assembly (96). Notably, Bartos does not describe nor suggest a plurality of circumferentially-spaced spray nozzles that are mounted upstream from a compressor

assembly, wherein the spray nozzles are oriented to discharge a liquid radially inward substantially co-planar with the spray nozzles.

Claim 20 recites a washing system for a gas turbine engine, wherein the washing system comprises “a pump . . . and a ring manifold coupled in fluid communication with said pump, said ring manifold mounted within said gas turbine engine upstream from a compressor, said ring manifold comprising a plurality of circumferentially-spaced spray nozzles that are substantially co-planar, at least one of said plurality of circumferentially-spaced spray nozzles oriented to discharge a liquid radially inward substantially co-planar with said plurality of circumferentially-spaced spray nozzles within the gas turbine engine....”

Applicants respectfully submit that Bartos does not describe nor suggest a washing system for a gas turbine engine as is recited in Claim 20. Specifically, Bartos does not describe nor suggest a plurality of circumferentially-spaced spray nozzles that are mounted upstream from a compressor assembly, wherein the spray nozzles are oriented to discharge a liquid radially inward substantially co-planar with the spray nozzles. Rather, in contrast to the invention, Bartos describes a spray ring assembly that includes holes that discharge liquid in a direction that is perpendicular to the plane of the assembly.

Accordingly, for at least the reasons set forth above, Claim 20 is submitted to be patentable over Bartos.

Claims 21-23 depend from independent Claim 20. When the recitations of Claims 21-23 are considered in combination with the recitations of Claim 20, Applicants respectfully submit that dependent Claims 21-23 likewise are patentable over Bartos.

For at least the reasons set forth above, Applicants respectfully request that the rejection of Claims 20-23 under Section 102 be withdrawn.

The rejection of Claims 18-20 under 35 U.S.C. § 102(b) as being anticipated by Bartos or, in the alternative, as being obvious over Bartos in view of U.S. Patent 5,944,483 (Beck) or U.S. Patent 5,273,395 (McDermott) is respectfully traversed.

Bartos is described above.

Beck describes wet cleaning a nozzle ring (7) of a turbine casing (1). Turbine casing (1) includes a gas-inlet casing (2) and a gas-outlet casing (3). Gas-inlet casing (2) includes ten radial recesses (10) that are distributed uniformly about its periphery. Each radial recess (10) houses an injection nozzle (11). A water line (19) is coupled to a water reservoir (not shown) and an air line (20) is coupled to a compressor (not shown). Water (37) is injected through injection nozzle (11) into a flow duct (8). Notably, Beck does not describe nor suggest a plurality of circumferentially-spaced spray nozzles that are mounted upstream from a compressor assembly, wherein the spray nozzles are oriented to discharge a liquid radially inward substantially co-planar with the spray nozzles.

McDermott describes a method of cleaning a gas turbine engine. The gas turbine engine includes a cylindrical hollow portion (2) and a curved air-flow directional portion (4). A manifold ring (20) is mounted about a periphery of an inlet of the engine. Ring (20) includes a plurality of nozzles (6, 8, 10, 12, 14, 16, 18) that are each mounted at a 30° pitch. Notably, McDermott does not describe nor suggest a plurality of circumferentially-spaced spray nozzles that are mounted upstream from a compressor assembly, wherein the spray nozzles are oriented to discharge a liquid radially inward substantially co-planar with the spray nozzles.

Claim 18 recites a gas turbine engine comprising “a compressor . . . a pump . . . and a ring manifold coupled in fluid communication with said pump, said ring manifold mounted within said gas turbine engine upstream from said compressor, said ring manifold comprising a plurality of circumferentially-spaced spray nozzles that are substantially co-planar, at least one of said plurality of circumferentially-spaced spray nozzles operable to discharge a first liquid to facilitate removing particulate matter and a second liquid to facilitate reducing a rate of formation of particulate matter, at least one of said plurality of circumferentially-spaced spray nozzles oriented to discharge at least one of the first liquid and the second liquid radially inward substantially co-planar with said plurality of circumferentially-spaced spray nozzles within said gas turbine engine such that at least a portion of said compressor is coated with the first liquid and the second liquid discharged from said spray nozzles.”

Applicants respectfully submit that no combination of Bartos and Beck or Bartos and McDermott describes nor suggests a gas turbine engine as is recited in Claim 18. Specifically, no combination of Bartos and Beck or Bartos and McDermott describes nor suggests a plurality of circumferentially-spaced spray nozzles that are mounted upstream

from a compressor assembly, wherein the spray nozzles are oriented to discharge a liquid radially inward substantially co-planar with the spray nozzles. Rather, in contrast to the invention, Bartos describes a spray ring assembly that includes holes that discharge liquid in a direction that is perpendicular to the plane of the assembly, Beck describes a turbine casing that includes a gas-inlet casing that includes a plurality of radial recesses that each houses an injection nozzle, and McDermott describes a ring manifold that includes a plurality of nozzles that are each mounted at a 30° pitch.

Moreover, if art "teaches away" from a claimed invention, such a teaching supports the nonobviousness of the invention. U.S. v. Adams, 148 USPQ 479 (1966); Gillette Co. v. S.C. Johnson & Son, Inc., 16 USPQ2d 1923, 1927 (Fed. Cir. 1990). In light of this standard, it is respectfully submitted that the cited art, as a whole, is not suggestive of the presently claimed invention. Rather, column 1, lines 45-47 and column 2, lines 40-41 of Beck recites:

During the wet cleaning, a large portion of the water used vaporizes on account of the high exhaust gas temperatures of the internal-combustion engine. . . . This design of the gas-inlet casing enables the water to be injected into the region directly upstream of the nozzle ring.

In other words, the gas-inlet casing, as described by Beck, is positioned adjacent to a turbine, which is downstream of a compressor. In contrast, the present application claims a ring manifold that is mounted *upstream* from a compressor. (Emphasis added). As such, Applicants respectfully submit that Beck, and thus the cited art as a whole, teaches away from a gas turbine engine as is recited in Claim 18.

Accordingly, for at least the reasons set forth above, Claim 18 is submitted as patentable over Bartos in view of Beck or McDermott.

Claim 19 depends from independent Claim 18. When the recitations of Claim 19 are considered in combination with the recitations of Claim 18, Applicants respectfully submit that dependent Claim 19 likewise is patentable over Bartos in view of Beck or McDermott.

Claim 20 is recited above.

Applicants respectfully submit that no combination of Bartos and Beck or Bartos and McDermott describes nor suggests a washing system for a gas turbine engine as is recited in Claim 20. Specifically, no combination of Bartos and Beck or Bartos and McDermott describes nor suggests a plurality of circumferentially-spaced spray nozzles that are mounted

upstream from a compressor assembly, wherein the spray nozzles are oriented to discharge a liquid radially inward substantially co-planar with the spray nozzles. Rather, in contrast to the invention, Bartos describes a spray ring assembly that includes holes that discharge liquid in a direction that is perpendicular to the plane of the assembly, Beck describes a turbine casing that includes a gas-inlet casing that includes a plurality of radial recesses that each houses an injection nozzle, and McDermott describes a ring manifold that includes a plurality of nozzles that are each mounted at a 30° pitch.

Moreover, if art “teaches away” from a claimed invention, such a teaching supports the nonobviousness of the invention. U.S. v. Adams, 148 USPQ 479 (1966); Gillette Co. v. S.C. Johnson & Son, Inc., 16 USPQ2d 1923, 1927 (Fed. Cir. 1990). In light of this standard, it is respectfully submitted that the cited art, as a whole, is not suggestive of the presently claimed invention. Rather, column 1, lines 45-47 and column 2, lines 40-41 of Beck recites:

During the wet cleaning, a large portion of the water used vaporizes on account of the high exhaust gas temperatures of the internal-combustion engine. . . . This design of the gas-inlet casing enables the water to be injected into the region directly upstream of the nozzle ring.

In other words, the gas-inlet casing, as described by Beck, is positioned adjacent to a turbine, which is downstream of a compressor. In contrast, the present application claims a ring manifold that is mounted *upstream* from a compressor. (Emphasis added). As such, Applicants respectfully submit that Beck, and thus the cited art as a whole, teaches away from a washing system for a gas turbine engine as is recited in Claim 20.

Accordingly, for at least the reasons set forth above, Claim 20 is submitted as patentable over Bartos in view of Beck or McDermott.

For at least the reasons set forth above, Applicants respectfully request that the rejections of Claims 18-20 under Section 102 and Section 103 be withdrawn.

The rejection of Claim 18 under 35 U.S.C. § 102(b) as being anticipated by Beck is respectfully traversed.

Beck is described above.

Claim 18 is recited above.

Applicants respectfully submit that Beck does not describe nor suggest a gas turbine engine as is recited in Claim 18. Specifically, Beck does not describe nor suggest a plurality of circumferentially-spaced spray nozzles that are mounted upstream from a compressor assembly, wherein the spray nozzles are oriented to discharge a liquid radially inward substantially co-planar with the spray nozzles. Rather, in contrast to the invention, Beck describes a turbine casing that includes a gas-inlet casing that includes a plurality of radial recesses that each houses an injection nozzle.

Moreover, if art "teaches away" from a claimed invention, such a teaching supports the nonobviousness of the invention. U.S. v. Adams, 148 USPQ 479 (1966); Gillette Co. v. S.C. Johnson & Son, Inc., 16 USPQ2d 1923, 1927 (Fed. Cir. 1990). In light of this standard, it is respectfully submitted that Beck is not suggestive of the presently claimed invention. Rather, column 1, lines 45-47 and column 2, lines 40-41 of Beck recites:

During the wet cleaning, a large portion of the water used vaporizes on account of the high exhaust gas temperatures of the internal-combustion engine. . . . This design of the gas-inlet casing enables the water to be injected into the region directly upstream of the nozzle ring.

In other words, the gas-inlet casing, as described by Beck, is positioned adjacent to a turbine, which is downstream of a compressor. In contrast, the present application claims a ring manifold that is mounted *upstream* from a compressor. (Emphasis added). As such, Applicants respectfully submit that Beck teaches away from a gas turbine engine as is recited in Claim 18.

Accordingly, for at least the reasons set forth above, Claim 18 is submitted as patentable over Beck.

For at least the reasons set forth above, Applicants respectfully request that the rejection of Claim 18 under Section 102 be withdrawn.

In view of the foregoing amendment and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully submitted,



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